# VSPM-6F2413S18

Inspector

**2D MACHINE VISION**

**SICK**
Sensor Intelligence.

## Ordering information

| Type | Part no. |
|------|----------|
| VSPM-6F2413S18 | 1076617 |

Other models and accessories ➜ www.sick.com/Inspector

## Detailed technical data

### Features

| | |
|------|------|
| **Task** | Presence inspection<br>Quality inspection<br>Measuring, 2D<br>Positioning<br>Robot guidance |
| **Technology** | 2D snapshot, image analysis |
| **Product category** | Configurable |
| **Toolkit** | Object locator<br>Pixel count<br>Edge pixel count<br>Pattern<br>Blob locator<br>Bead<br>Edge<br>Circle<br>Distance<br>Angle<br>Edge counter<br>Find maximum |
| **Sensor** | CMOS matrix sensor, grayscale values |
| **Optical focus** | Adjustable focus (manually) |
| **Calibration** | Perspective and lens distortion correction, mm results |
| **Robot coordinate alignment** | ✓ |
| **Working distance** | ≥ 50 mm |
| **Operating distance with internal illumination** | 50 mm ... 200 mm |
| **Field of view of internal illumination** | 22 mm x 15 mm ... 79 mm x 58 mm |
| **Light source** | |
| Internal lighting | Infrared, |
| **LED class** | Risk-free group (no danger, IEC62471: 2006) |
| **Spectral range** | Approx. 370 nm ... 900 nm |
| **Offline support** | Emulator |

| Lens | S-mount |
|---|---|
| Optical format | 1/3" |
| Focal length | 10 mm |

## Mechanics/electronics

| | |
|---|---|
| **Connection type** | M12, 12-pin male connector<br>M12, 4-pin female connector |
| **Supply voltage** | 24 V DC, ± 20 % |
| **Ripple** | < 5 $V_{pp}$ |
| **Current consumption** | < 450 mA, without output load |
| **Enclosure rating** | IP67 [1] |
| **Housing material** | Aluminum |
| **Window material** | Visible block filter, glass |
| **Weight** | 350 g |
| **Dimensions (L x W x H)** | 100 mm x 53 mm x 38 mm |

[1] With front window mounted.

## Performance

| | |
|---|---|
| **Sensor resolution** | 640 px x 480 px |
| **Scan/frame rate** | 40 fps [1] |
| **Number of inspections** | 32 |
| **Reference images** | 32 objects |

[1] Max. 200 fps.

## Interfaces

| | |
|---|---|
| **Ethernet** | ✓, TCP/IP |
| Data transmission rate | 100 Mbit/s |
| **EtherNet/IP™** | ✓ |
| Data transmission rate | 100 Mbit/s |
| **Operator interfaces** | Web server |
| **Configuration software** | SOPAS ET |
| **Data storage and retrieval** | 20 images device log, record images on PC, store images to FTP |
| **Ethernet communication** | Web API |
| **Digital input** | 4 inputs (24 V) |
| **Configurable inputs** | External trigger, encoder input, External teach, reference object selection |
| **Digital output** | 3 digital outputs, 24 V (B-type) |
| **Configurable outputs** | Output by logical expressions, Additional image storage possibility via FTP |
| **Output current** | ≤ 100 mA |
| **Standard outputs** | No object detected, Everything OK, Detail error |
| **Maximum encoder frequency** | 40 kHz |
| **External illumination control** | 5 V TTL |
| **I/O box extension** | 5 x inputs for object selection, 16 outputs |

## Ambient data

| | |
|---|---|
| **Shock load** | EN 60068-2-27 |
| **Vibration load** | IEC 60068-2-6 |
| **Ambient operating temperature** | 0 °C ... +45 °C [1] |
| **Storage temperature** | −20 °C ... +70 °C [1] |

[1] Relative humidity: 35% ... 85%, 95% in storage.

## Classifications

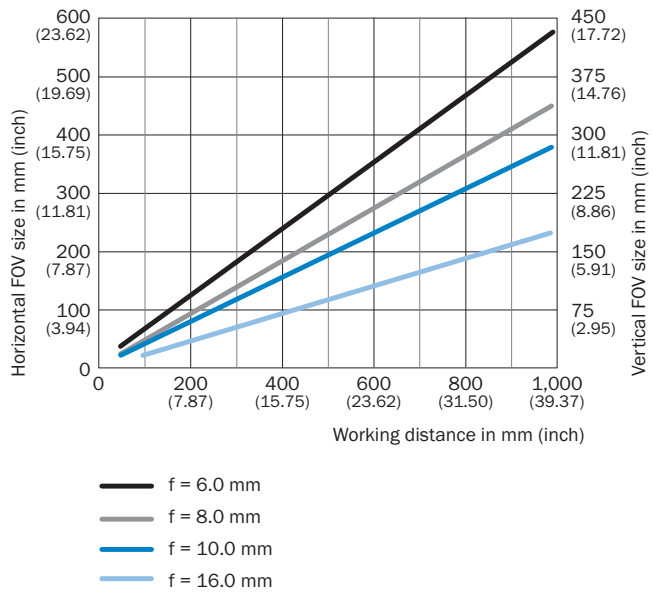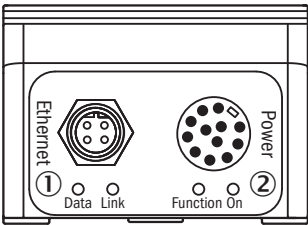| | |
|---|---|
| **ECl@ss 5.0** | 27310205 |
| **ECl@ss 5.1.4** | 27310205 |
| **ECl@ss 6.0** | 27310205 |
| **ECl@ss 6.2** | 27310205 |
| **ECl@ss 7.0** | 27310205 |
| **ECl@ss 8.0** | 27310205 |
| **ECl@ss 8.1** | 27310205 |
| **ECl@ss 9.0** | 27310205 |
| **ECl@ss 10.0** | 27310205 |
| **ECl@ss 11.0** | 27310205 |
| **ETIM 5.0** | EC001820 |
| **ETIM 6.0** | EC001820 |
| **ETIM 7.0** | EC001820 |
| **ETIM 8.0** | EC001820 |
| **UNSPSC 16.0901** | 43211731 |

## Dimensional drawing (Dimensions in mm (inch))

Standard
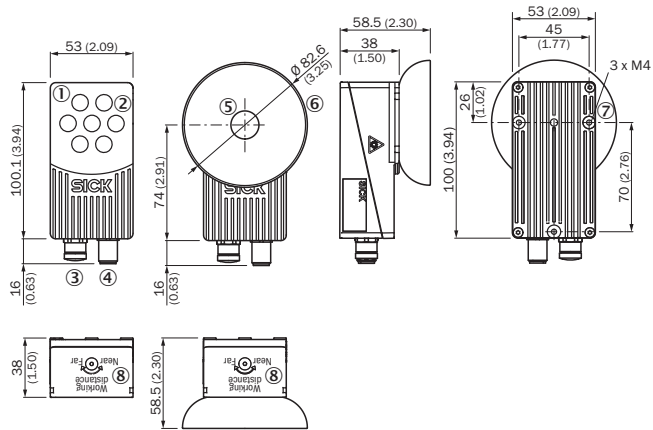
① Front screen: standard, flex
② Ring lighting
③ Ethernet connection M12, 4-pin, female
④ Power connection M12, 12-pin, male
⑤ Front screen: dome
⑥ Dome light
⑦ Mounting hole M4
⑧ Focus

## Field of view

Theoretical FOV size (640 x 480 pixels)

Horizontal FOV size in mm (inch)

Vertical FOV size in mm (inch)

Working distance in mm (inch)

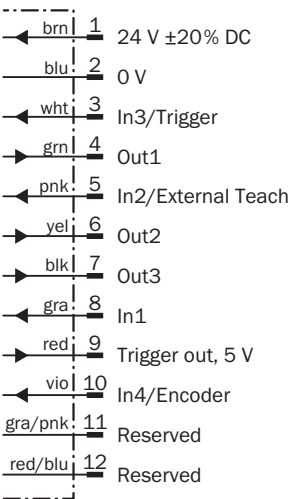— f = 6.0 mm
— f = 8.0 mm
— f = 10.0 mm
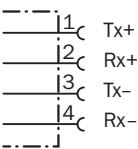— f = 16.0 mm

## Connection type



① Ethernet connection M12, 4-pin, female
② Power connection M12, 12-pin, male

## Connection diagram

M12 connection diagram, 12-pin

| Color | Pin | Description |
|---|---|---|
| brn | 1 | 24 V ±20 % DC |
| blu | 2 | 0 V |
| wht | 3 | In3/Trigger |
| grn | 4 | Out1 |
| pnk | 5 | In2/External Teach |
| yel | 6 | Out2 |
| blk | 7 | Out3 |
| gra | 8 | In1 |
| red | 9 | Trigger out, 5 V |
| vio | 10 | In4/Encoder |
| gra/pnk | 11 | Reserved |
| red/blu | 12 | Reserved |

Ethernet connection diagram

| Pin | Description |
|---|---|
| 1 | Tx+ |
| 2 | Rx+ |
| 3 | Tx− |
| 4 | Rx− |

## Recommended accessories

Other models and accessories ➜ www.sick.com/Inspector

| | Brief description | Type | Part no. |
|---|---|---|---|
| **Lenses and accessories** | | | |
| | Exchangeable lens, focal length 6 mm, Round connector M12 x 0.5 | OBJ-B06025BA | 2049668 |

| | Brief description | Type | Part no. |
|---|---|---|---|
| | Exchangeable lens, focal length 16 mm, including spacer ring, Round connector M12 x 0.5 | OBJ-B16018BA | 2049418 |

**Optical filters**

| | Brief description | Type | Part no. |
|---|---|---|---|
| | Visible block filter for variants with exchangeable lens and front window, glass | Inspector Flex visible block filter | 2071856 |
| | Visible block filter for variants with exchangeable lens and front window, PMMA | Inspector Flex visible block filter | 2073707 |

**Plug connectors and cables**

| | Brief description | Type | Part no. |
|---|---|---|---|
| | Head A: female connector, M12, 12-pin, straight<br>Head B: Flying leads<br>Cable: Sensor/actuator cable, PUR, halogen-free, shielded, 5 m | DOL-1212-G05MAS01 | 6036556 |
| | Head A: male connector, M12, 4-pin, straight, D-coded<br>Head B: male connector, RJ45, 4-pin, straight<br>Cable: Ethernet, PROFINET, PUR, halogen-free, shielded, 2 m | YM2D24-020PN1MRJA4 | 2106182 |

## Recommended services

Additional services ➜ www.sick.com/Inspector

| | Type | Part no. |
|---|---|---|
| **Warranty extensions** | | |
| • **Product area:** Identification solutions, machine vision, Distance sensors, Detection and ranging solutions<br>• **Range of services:** The services correspond to the scope of the statutory manufacturer warranty (SICK general terms and conditions of purchase)<br>• **Duration:** Five-year warranty from delivery date. | Extended warranty for a total of five years from delivery date | 1680671 |
| **Commissioning** | | |
| • **Product area:** 2D machine vision<br>• **Range of services:** Inspection of connection, fine adjustment, optimization of parameters of SICK product as well as tests, set-up of previously defined functions of image settings, object locator, detailed inspections, output settings and results<br>• **Travel expenses:** The prices do not include travel costs such as hotel, flight, travel time and expenses.<br>• **Duration:** Additional work will be invoiced separately | Inspector commissioning | 1612238 |
| **Maintenance** | | |
| • **Product area:** 2D machine vision<br>• **Range of services:** Inspection, analysis and restoring of defined functions, set-up of previously defined functions of image settings, object locator, detailed inspections, output settings and results<br>• **Duration:** Additional work will be invoiced separately<br>• **Travel expenses:** The prices do not include travel costs such as hotel, flight, travel time and expenses. | Inspector maintenance | 1612242 |

| | Type | Part no. |
|---|---|---|
| **Feasibility study** | | |
| • **Product area:** 2D machine vision, 3D machine vision<br>• **Range of services:** Recommendations based on tests at SICK, description of the field of application, consideration of specifications of SICK products, identification of performance factors, temporary analysis of influencing factors, acceptance tests, adjustments to application-specific parameters, test scans for initial verification at SICK, documentation and archiving<br>• **Documentation:** Description of the application, suggestion for a solution, proof of concept, mounting instructions, results and summary<br>• **Duration:** Additional work will be invoiced separately<br>• **Travel expenses:** The prices do not include expenses or costs for the travel time, travel costs, such as flight or hotel expenses, are not included | Vision Gold feasibility study | 1612805 |

# SICK AT A GLANCE

SICK is one of the leading manufacturers of intelligent sensors and sensor solutions for industrial applications. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents and preventing damage to the environment.

We have extensive experience in a wide range of industries and understand their processes and requirements. With intelligent sensors, we can deliver exactly what our customers need. In application centers in Europe, Asia and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes us a reliable supplier and development partner.

Comprehensive services complete our offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

**For us, that is "Sensor Intelligence."**

# WORLDWIDE PRESENCE:

Contacts and other locations –**www.sick.com**

SICK AG  |  Waldkirch  |  Germany  |  www.sick.com

**SICK**
Sensor Intelligence.